

REMARKS

Reconsideration of the present application is respectfully requested in view of the following remarks. Claims 1, 2, 6, and 7 are currently pending in the application, of which claims 1 and 6 are independent. In the Final Office Action dated July 7, 2005, the Examiner rejected claims 1, 2, 6, and 7 under 35 U.S.C. §103(a) as being obvious over U.S. Patent No. 4,182,437 ("*Roberts*") in view of U.S. Patent No. 5,583,080 ("*Gulberg*") and in further view of JP 56016578A and U.S. Patent No. 5,871,159 ("*Carlson*"). The Examiner also rejected claims 1, 2, 6, and 7 under 35 U.S.C. §103(a) as being obvious over *Roberts* in view of U.S. Patent No. 4,090,882 ("*Rauschenfels*") and in further view of JP 56016578A and *Carlson*.

In response, Applicants have amended independent claim 1 to more particularly define the invention and added new claims 8 and 9. No new subject matter has been added. Support for the added recitation of individual fibers may be found, for example, at page 7, lines 1 to 18. In particular, each fiber of the soluble amorphous substance according to the present invention of amended claim 1 is said to "have an average fiber diameter in a range of from 2 μm to 9 μm , preferably in a range of from 3 μm to 6 μm ." "In addition, the average fiber length is in a range of from 100 μm to 1,500 μm , preferably in a range of from 500 μm to 1,000 μm ." The necessity for requiring the specific fiber diameter and length may also be found in the above cited portion of the Application disclosure. Applicants hereby address the Examiner's rejections in turn.

Rejections over *Roberts*, *Gulberg*, JP 56016578A, and *Carlson*

In making the rejections of claims 1, 2, 6, and 7 over the above combination, the Examiner conceded that *Roberts* fails to show or suggest "at least 0.1wt% but less than 10

wt% of at least one of Al_2O_3 and ZrO_2 ,” as required by independent claims 1 and 6. Office Action, page 4. The Examiner instead relied on *Guldborg* to show this feature. Applicants submit that *Guldborg* cannot be used in the above combination to reject Applicants’ claims 1 and 6 at least because *Guldborg* teaches away from Applicants’ invention.

Specifically, *Guldborg* explicitly states that its mineral composition consists of 6.5-8 ww% FeO. Column 3, line 56, and column 4, line 15. *Guldborg* additionally explains that because “[t]he ferrous/ferric oxide plays the important role of a crystal nucleating agent in the conversion of the mineral fibre material from an amorphous condition to a crystalline or pseudo crystalline state during external influence of heat. . . this provides certain restrictions on the minimum amount of ferrous/ferric oxide component present in the composition.” Column 3, lines 19-25. Additionally, the disclosure of a higher composition of ferrous/ferric oxide may be found, for example, at column 6, lines 20-25. Through those descriptions, *Guldborg* unambiguously requires a percentage of ferrous/ferric oxide in its composition that is at least three times more than the “less than 2 wt% of at least one of Na_2O , K_2O , FeO , Fe_2O_3 ” recited in Applicants’ claims 1 and 6. Therefore, Applicants submit that *Guldborg* expressly teaches away from Applicants’ invention and fails to provide any necessary motivation that would have led a person skilled in the art to combine the teaching of *Guldborg* with the other cited references in an effort to make the invention of claims 1 and 6.

Moreover, the Examiner acknowledged that *Roberts* fails to explicitly disclose “an average fiber length in a range of from 100 μm to 1,500 μm ,” as required by independent claim 1. However, the Examiner contended that *Roberts* states that “the diameter and length of the fibers are not at all critical and may vary widely.” Office Action, page 3. Applicants submit that the specific fiber length range recited in claim 1 is critical in Applicant’s invention to

ensure obtainment of the necessary reinforcement effect and the appropriate fiber dispensability in the soluble amorphous substance. See Applicants' disclosure, page 7, lines 11-17. Applicants also submit that the cited statement from *Roberts* was qualified immediately thereafter in its disclosure by a specific range, which explicit states "[l]engths, when continuous fibers are not used, may average from about 1 centimeter to about 50 centimeters." Column 7, lines 1-3. Therefore, *Roberts*' statement that "length of the fibers are not at all critical and may vary widely" could be seen only as a reference to the provided range of 1 cm to about 50 cm. That range, when converted to 10,000 μm to 500,000 μm , is significantly longer than "an average fiber length in a range of from 100 μm to 1,500 μm ," as required by Applicants' claim 1 and which according to Applicants' disclosure result in the deterioration of fiber dispensability in Applicants' soluble amorphous substance. Applicants' disclosure, page 7, lines 15-17. Applicants further submit that *Roberts*' mere mention that "powder or beads, which, if desired, can be fabricated from the fibers" fails to show or suggest the specific grain size requirement of claim 6, which clearly recites that "the soluble amorphous substance is formed of grains having an average grain size in a range of from 2 μm to 100 μm ." The necessity for using the specified grain size is explained in Applicants' disclosure at page 7, line 19 to page 8, line 1.

Furthermore, Applicants submit that JP 56016578A and *Carlson*, which were referred to by the Examiner as disclosing fiber length of 0.5-30 mm and 374 μm , respectively, fail to show or suggest Applicants' composition as recited in independent claims 1 and 6. Applicants additionally submit that both JP 56016578A and *Carlson* fails to show or suggest the soluble amorphous substance being formed of grains having an average grain size in a range of from 2 μm to 100 μm . Therefore, Applicants submit that neither JP 56016578A nor *Carlson*

provides the necessary motivation to being combined with *Roberts* and *Guldborg* to arrive at Applicants' invention of claims 1 and 6.

Accordingly, Applicants submit that for at least the above reasons, independent claims 1 and 6 are not obvious under 35 U.S.C. §103(a) over the combination of *Roberts*, *Gulberg*, JP 56016578A, and *Carlson*. Claims 2, 7, 8, and 9 depend from claims 1 and 6, and are therefore also not obvious over the above combination for at least the same reasons.

Rejections over *Roberts*, *Rauschenfels*, JP 56016578A, and *Carlson*

In making the rejections of claims 1, 2, 6, and 7 over the above combination, the Examiner relied exclusively on *Rauschenfels* to show "at least 0.1wt% but less than 10 wt% of at least one of Al_2O_3 and ZrO_2 ," as required by independent claims 1 and 6. Applicants respectfully traverse the Examiner's rejections and submit that there is no motivation to create the above combination at least because *Rauschenfels* teaches away from the invention of claims 1 and 6.

More specifically, *Rauschenfels* clearly states, at column 3, lines 15-17, its preferred glass fibers are "in the form of tows and endless glass fibers, glass fiber mats, rope-like constructions or sections of glass fiber bundles." This is in stark contrast to amended claim 1, which requires that "the soluble amorphous substance is formed of individual fibers having an average fiber diameter in a range of from 2 μm to 9 μm and an average length of from 100 μm to 1,500 μm ." *Rauschenfels*' preference for bundles and other group formations of fibers, additionally teaches away from soluble amorphous substance being formed of "grains having an average grain size in a range of from 2 μm to 100 μm ," as required by claim 6. Furthermore, Applicants submit that the utilization of individual fibers and grains within the

required size ranges of claims 1 and 6 ensures the uniformed dispersion of fibers and grains in the soluble amorphous substance, which improves its quality as friction material. As mentioned above, explanation and support for the necessity of the above fiber and grain size requirements of claims 1 and 6 may be found in the present specification located at, for example, page 2, lines 4-10, page 6, lines 17-26, and page 7, lines 1 to page 8, line 1. In view of the above reasons, Applicants submit that *Rauschenfels* fails to provide the necessary motivation to being combined with *Roberts*, JP 56016578A, and *Carlson* to arrive at Applicants' invention of claims 1 and 6.

Accordingly, at least because there is no motivation to create the above combination, Applicants submit that independent claims 1 and 6 are not obvious under 35 U.S.C. §103(a) over the combination of *Roberts*, *Gulberg*, JP 56016578A, and *Carlson*. Claims 2, 7, 8, and 9 depend from claims 1 and 6, and are therefore also not obvious over the above combination for at the same reasons.

Conclusion


In view of the foregoing remarks, Applicants submit that the claims, as amended, are neither anticipated nor rendered obvious in view of the prior art references cited against this application. Therefore, Applicants respectfully request reconsideration and the timely allowance of the pending claims.

Please grant any extensions of time required to enter this response and charge any additional required fees to our Deposit Account 06-0916.

Respectfully submitted,

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